

CLAIMS

What is claimed is:

- 1 1. A connector for attachment with a hose comprising:
2 a hose nipple with a first longitudinal end, a second longitudinal end and a bore
3 extending therethrough, said hose nipple having a generally tubular shape with an exterior
4 surface defining an outwardly extending annular protuberance located between said first
5 and said second ends; and
6 a clip for attachment with said hose nipple having a base portion with a support
7 bar connected to a series of pincer fingers having an inner surface which matingly abuts
8 said annular protuberance, said clip further including at least two longitudinal legs
9 extending from said base portion, said legs being radially outwardly distanced from said
10 nipple exterior surface.
- 1 2. The connector as in claim 1 wherein said annular protuberance is an annular bead
2 with a first axial surface, and a second axial surface, joined via a curved portion, with
3 said inner surface of said series of pincer fingers having a shape complementary with said
4 annular bead.
- 1 3. The connector as in claim 1 wherein said support bar has a hinge-like first end
2 attached to a first arm portion which includes a first and a second of said series of pincer
3 fingers, and one of said at least two longitudinal legs being positioned between said first
4 and second pincer fingers, said support bar further having a hinge-like second end
5 attached to a second arm portion which includes a third and a fourth of said series of
6 pincer fingers, and another of said at least two longitudinal legs positioned between said
7 third and fourth pincer fingers, said base portion further having an axial opening between

8 said second and said third pincer fingers and a radial opening located at said base portion
9 axial center.

1 4. The connector as in claim 1 wherein the outer surface of said at least two
2 longitudinal legs has two longitudinally extending surfaces separated by a radially raised
3 portion.

1 5. The connector as in claim 1 wherein said at least two longitudinal legs have a
2 longitudinal extent similar to that of said nipple second longitudinal end.

1 6. The connector as in claim 3 wherein each of said series of pincer fingers is located
2 at a substantially equal radial distance from its adjacent pincer fingers.

1 7. The connector as in claim 1 wherein said at least two longitudinal legs are
2 laterally curved in an arc-like manner.

1 8. The connector as in claim 7 wherein the radius of curvature of said legs
2 complement the radius of curvature of the peripheral outer surface of said conduit.

1 9. An improved connector for attachment with a hose having a generally tubular
2 shaped longitudinal nipple with a proximal end, a distal end and a bore extending
3 therethrough, said hose nipple having an exterior surface defining an outwardly extending
4 annular protuberance located between said proximal and distal ends, wherein the
5 improvement comprises:

6 a clip for attachment with said hose nipple having a base portion connected with
7 at least two longitudinally extending legs, said base portion having an axial opening, a
8 radial opening, a support bar with a first end and a second end, a first arm portion

9 attached to said support bar first end having a first set of locating fingers and one of said
10 at least two longitudinally extending legs and a second arm portion attached to said
11 support bar second end having a second set of locating fingers and another of said at least
12 two longitudinally extending legs, each of said locating fingers having an inner surface
13 which is adapted to mate with said annular protuberance, said at least two longitudinally
14 extending legs being radially outwardly distanced from said nipple exterior surface and
15 have an outer surface adapted to receive at least one annular, diametrically compressible
16 clamp.

1 10. The connector as in claim 9 wherein said outwardly extending annular
2 protuberance is an annular bead circumferentially extending about said exterior surface,
3 said annular bead having two generally radially extending parallel surfaces with an curved
4 portion therebetween.

1 11. The connector as in claim 10 wherein said at least two locating fingers have an
2 inner surface shaped similarly to that of said annular bead, wherein said inner surface is in
3 abutting contact with said annular bead when said clip is attached to said nipple.

1 12. The connector as in claim 9 wherein said first and said second set of locating
2 fingers have at least two fingers which are equally circumferentially spaced from adjacent
3 ones of said fingers.

1 13. The connector as in claim 9 wherein said first set of locating fingers has a first and
2 a second finger with one of said at least two longitudinally extending legs positioned
3 between said first and said second locating finger, said second set of locating fingers
4 having a third and a fourth finger with a second of said at least two longitudinally

5 extending legs positioned therebetween, said first, second, third and fourth finger being
6 substantially equally circumferentially distributed.

1 14. The connector as in claim 13 wherein said radial opening is located between said
2 second and third finger.

1 15. The connector as in claim 9 wherein said at least two locating fingers have
2 opposing axial surfaces which are adapted to affixedly contact the external axial surface
3 of said outwardly extending annular protuberance.

1 16. The connector as in claim 9 wherein said at least two longitudinally extending
2 legs have an arc-shaped radial extent.

1 17. The connector as in claim 9 wherein said at least two longitudinally extending
2 legs have at least one radially raised surface.

1 18. The connector as in claim 16 wherein said clamp receiving outer surface of said at
2 least two longitudinally extending legs is comprised of two longitudinally extending
3 surfaces and said at least one radially raised surface is interposed between said two
4 surfaces.

1 19. The connector as in claim 9 wherein said support bar first and second ends are of
2 reduced cross-section so as to function in a hinge-like manner so that said first and said
3 second arm portions can move radially inwardly and outwardly and axially bi-
4 directionally with respect to said support bar.

1 20. The connector as in claim 9 wherein said at least two longitudinally extending
2 legs have a distal end extending for a distance substantially the same as that of said nipple
3 distal end portion.

1 21. A hose assembly for conducting fluid comprised of a conduit, a connector and at
2 least one annular clamp, wherein:

3 said conduit has an inner surface, an outer surface and an end;

4 said connector has:

5 a generally tubular shaped longitudinal nipple with a proximal end, a distal
6 end and a bore extending therethrough, said nipple having an exterior
7 surface defining an outwardly extending annular protuberance, located
8 between said proximal and distal ends, having two generally radially
9 extending parallel surfaces joined via a curved portion, said nipple distal
10 end being adapted for insertion into said conduit end and having an outside
11 diameter similar to said conduit inner surface diameter wherein the
12 improvement comprises:

13 a clip for attachment with said hose nipple having:

14 a base portion connected with at least a first and a second
15 longitudinally extending leg, said base portion having:

16 an axial opening;

17 a radial opening;

18 a support bar with a first end and a second end;

19 a first hinge portion of said support bar first end and
20 separating said support bar first end from a first arm
21 portion;

22 said first arm portion having:

23 a first locating finger;

24 a second locating finger; and
25 said first longitudinally extending leg located
26 between said first and second locating finger;
27 a second hinge portion of said support bar second end and
28 separating said support bar second end from a second arm
29 portion;
30 said second arm portion having:
31 a third locating finger;
32 a fourth locating finger; and
33 said second longitudinally extending leg located
34 between said third and fourth locating fingers;
35 each of said locating fingers having an inner surface
36 shaped similarly to said annular protuberance which
37 allows each of said locating fingers to mate with
38 said annular protuberance; and
39 said first, second, third and fourth locating fingers
40 being substantially equally circumferentially
41 distributed;
42 said first and second longitudinally extending legs being
43 radially outwardly distanced from said nipple exterior
44 surface and have an outer surface with at least one radially
45 recessed portion which receives said annular clamp and at
46 least one radially raised surface adjacent said at least one
47 clamp receiving portion; and
48 said annular clamp being positioned around said first and said
49 second longitudinally extending legs, said conduit and said nipple,
50 and having a diametrically compressible portion which allows said

51 clamp to compress said conduit between said nipple and both of
52 said longitudinally extending legs.

1 22. The hose assembly as in claim 21 wherein said at least first and second
2 longitudinally extending legs are laterally curved in an arc-like manner.

1 23. The hose assembly as in claim 22 wherein the radius of curvature of said legs
2 complement the radius of curvature of the peripheral outer surface of said conduit.